URS to determine the required takeoff weight for operations to these markets with full passenger loads.

URS then obtained takeoff performance tables that reflected the removal of all existing vegetative obstructions from the runway approaches at EYW. This was done to ensure the data in the takeoff performance tables was not biased by existing obstructions within the runway approaches thereby indicating a longer runway length than would otherwise be required. This is because obstructions within runway approaches can have a significant adverse impact on takeoff weight limitations.

The result of these consultations indicate that the critical takeoff weights are as follow:

CRJ200 to Orlando – 45,300 lbs. – (40 seat variant)
CRJ200 to Orlando – 47,500 lbs. – (50 seat variant)
CRJ700 to Atlanta – 71,000 lbs.

Takeoff performance tables for the CRJ200 and CRJ700 with a runway length of 5,800 feet (i.e., a 500-foot runway extension on each end of the existing runway), and no vegetative obstructions, is shown in Appendix B – Runway Length Analyses. The first column of the table indicates air temperature. Thus, for a given temperature, the table indicates the weight limitation for takeoff on each end of the runway. The weight limitation for takeoffs on Runway 9 is provided first, followed by the weight limitation for takeoffs on Runway 27.

The mean maximum temperature for the hottest month at EYW is 89 degrees Fahrenheit (32 degrees Celsius). Thus, runway length requirements should be calculated on the basis of this temperature. Using a temperature of 89 degrees, the indicated weight limitations on both Runway 9 and Runway 27 for the CRJ700 is 72,260 pounds. This is slightly more than the 71,000 pounds required for operation to Atlanta. Thus, a runway length of 5,800 feet would be capable of accommodating the operation of this aircraft to Atlanta without restrictions on passenger loads except during unusually hot conditions.

Review of the table for the CRJ200 indicates that the weight limitation at 89 degrees is 47,864 pounds. This exceeds the takeoff weight of 45,300 pounds for the 40-seat variant and is very close to the takeoff weight of 47,500 pounds for the 50-seat variant. Therefore a runway length of 5,800 feet would be capable of accommodating the operation of this aircraft to Orlando without restrictions on passenger loads except during unusually hot conditions.

For comparison purposes, the takeoff weight limitation for these aircraft with the existing runway length of 4,801 feet is shown in Appendix B. The takeoff weight limitation for the CRJ700 ranges from 63,000 to 65,000 pounds depending on the runway end used for departure. The takeoff weight limitation for the CRJ200 ranges from 42,000 to 43,000 pounds depending on the runway end used for departure. Thus, both aircraft would not be capable of departing with a full passenger load. Calculations indicate that the number of seats blocked would range from 21 seats on the CRJ-200 to as many as 25 seats on the CRJ700 under hot day conditions.

The results of the analysis indicate that a runway length of approximately 5,800 feet is required to operate the 40-seat and 50-seat version of the CRJ-200 series and the CRJ-700 series to existing destinations without any limitations on passenger loads. Thus on the basis of the takeoff performance table methodology it appears that a runway length of 5,800 feet is required.

Conclusion

The results of the three methodologies revealed the following runway length requirements at EYW.

Methodology	Runway Length Requirement
Airport Design Computer Program	5,400 Feet
FAA Southern Region Guidance Letter	5,015 Feet
Takeoff Performance Tables	5,800 Feet

As previously noted each of the methodologies has inherent limitations. However, of the three methodologies the takeoff performance tables are by far the most accurate and are based upon aircraft that operate at EYW on a daily basis. Since these aircraft have the most demanding runway length requirements, a runway length requirement of 5,800 feet is justified.

3.2.3.7 Runway Width

Runway width requirements are determined by airplane design group standards. The recommended width for runways serving aircraft in design group III is 100 feet. Runway 9/27 currently has a width of 100 feet. This width meets standards and is adequate to serve all aircraft projected to use EYW on a regular basis throughout the study period.

3.2.3.8 Runway Strength

Pavement strength requirements are related to three primary factors: 1) the weight of aircraft anticipated to use the airport, 2) the landing gear type and geometry, and 3) the volume of aircraft operations. According to the airport's FAA 5010 Form "Airport Master Record," Runway 9/27 has a pavement strength of 40,000 pounds single-wheel loading and 95,000 pounds dual-wheel loading and 130,000 pounds dual tandem loading. This strength is sufficient to accommodate all existing and future aircraft projected to regularly operate at EYW.

3.2.3.9 Runway Pavement Markings

Runway 9/27 currently has visual runway markings. This type of runway marking is not adequate for the existing non-precision approaches to Runway 9 and Runway 27. Therefore, it is recommended that non-precision runway markings be applied to the runway at the time the runway is rehabilitated.

3.2.3.10 Taxiways

Taxiways are needed to accommodate the movement of aircraft from parking aprons to the runways and vice versa. In order to provide for the efficient movement of aircraft, it is desirable to have a parallel taxiway and several exit taxiways associated with each runway. The recommended width is 50 feet for taxiways serving aircraft in design group III. As noted in Section 1 - Inventory, most of the taxiways at EYW have a width of 50 feet, except Taxiway Bravo and Foxtrot that have widths of 150 feet. Thus, the existing taxiway widths are adequate to serve all existing and future aircraft that are projected to use the airport on a regular basis.

The existing taxiway system at EYW provides convenient access to all operational areas of the airport. The only taxiway improvements that may be required in the future would be an extension of Taxiway Alpha to serve any proposed runway extensions.

3.2.3.11 Holding Bays

There are no holding bays on the taxiway system at EYW. The purpose of holding bays is to provide space for one aircraft to pass another in order to reach the runway end. This reduces airfield delays when one aircraft is conducting engine run-ups or is being held for air traffic control reasons. Consultation with air traffic control personnel at EYW indicated that due to the nature and low volume of aircraft operations at EYW, holding bays are not needed. Thus, the construction of holding bays is not recommended at this time.

3.2.3.12 Navigational Aids

There are no electronic navigational aids located at EYW, although the airport does have a series of visual navigational aids as described in Section 1- Inventory. In addition, there are electronic navigational aids located in the vicinity of the airport. These include a non-directional beacon which is located slightly more than 1 mile west of the airport. This NDB is used for non-precision approaches to Runway 9. A VORTAC is also located northwest of the airport, but is not used for a published instrument approach to EYW.

The need for a precision instrument approach at EYW was expressed during a Safety Risk Assessment conducted by the Air Line Pilots Association in March 2002. This Safety Risk Assessment was conducted to assess issues related to the establishment of regional jet operation at EYW. The results of the risk assessment identified two risks that were classified as being undesirable. The first was the lack of runway safety areas. The second was the lack of precision approach capability.

The installation of an Instrument Landing System at EYW is not feasible due to a variety of reasons including lack of land and required clearances from other objects. Furthermore, the FAA is in the process of transitioning from ground based navigation aids, such as ILS, to satellite based navigation, such as GPS. Therefore, as of March 2003, there appears to be two potential options for providing precision instrument approach capability at EYW. These options include the use of GPS or the use

of a Transponder Landing System (TLS). The use of GPS as a precision approach technology depends on the Wide Area Augmentation System (WAAS) or a Local Area Augmentation System (LAAS). Current FAA plans call for the WAAS to be commissioned at the end of 2003. However, a number of events must occur before either WAAS or LAAS would become a reality at EYW. These issues include the development of appropriate approach procedures and the installation of appropriate avionics in the aircraft that would use the approaches. Consequently, it is not anticipated that GPS approaches will provide precision approach capability at EYW until the 2007 to 2019 timeframe.

The use of TLS is a more immediate option because the technology currently available is certified by the FAA and is currently operational. This technology consists of some ground based electronic equipment that use the signal received from an aircraft's transponder to determine the aircraft's position relative to a glide path. The pilot is able to determine whether the aircraft is above or below the glide path as though the pilot was flying an ILS approach.

One of the primary benefits of TLS is its ability to be installed at site-constrained airports where insufficient airport property exists for the installation of an ILS. This is especially appropriate for EYW due to its lack of property. Disadvantages of TLS include the need for a ground operator and limitations on the number of approaches that can be accomplished in a period of time and the fact that it is not certified for FAR Part 91 operations.

A preliminary assessment of the feasibility of installing a TLS at EYW has been completed. The results of the assessment indicated that the installation of a TLS at EYW is feasible and would improve current minimums at the airport. This finding is subject to a more detailed evaluation.

Unfortunately, TLS is not currently eligible for funding under the FAA's Airport Improvement Program. It is eligible for FAA Facility and Engineering funds if appropriated by congressional action. Of course, TLS could also be funded through non-federal sources. The cost of a system is approximately $825,000 plus installation costs.

If a precision approach capability is desired in the short-term, it is recommended that the installation of a TLS be considered. Augmented GPS would be the best option for precision approach capability at EYW on an intermediate-term to long-term basis, because it is funded by the FAA and will provide capability for both FAR Part 121 and Part 91 operations.

3.2.3.13 Airfield Lighting

Approach Lighting

Runway End Identification Lights are currently installed on both ends of Runway 9/27. No other type of approach lighting system is located at EYW. The need for an approach lighting system is connected to the establishment of a precision instrument approach procedure and the need to achieve certain approach minimums. Specifically, an approach lighting system is needed to obtain visibility minimums lower than 1 statute mile for an approach procedure with vertical guidance and less than

¾ mile for precision instrument approaches. Considering the lack of suitable land, the environmental constraints and the small percentage of time that low visibility conditions occur, the installation of an approach lighting system is not recommended at this time.

Runway and Taxiway Lighting

Runway 9/27 is equipped with medium intensity edge lighting. This system is standard for runways with non-precision instrument approaches and is acceptable for precision instrument approaches that do not have RVR based minimums. This edge lighting system is sufficient to serve existing and future needs at EYW.

3.3 AIRSPACE

3.3.1 DEMAND/CAPACITY ANALYSIS

Airspace in the vicinity of EYW is constrained by regulatory, physical, and operational factors. A brief description of these factors is provided in the following paragraphs.

As noted in Section 1, Naval Air Facility (NAF) Key West is located approximately 3 miles east of EYW and its airspace adjoins the airspace for EYW. The distance from the approach end of Runway 27 to the boundary of NAF airspace is only 1.33 nautical miles. This necessitates that aircraft departing from Runway 9 make an immediate left turn after departure to remain clear of NAF airspace. Conversely when approaches are being made to Runway 27 tight turns close to the runway are required to remain clear of NAF airspace. These constraints are managed through coordination of air traffic control service between EYW and NAF Key West.

While the proximity of the two airports and their adjoining airspace is clearly a constraint on operations, air traffic control procedures are able to manage the interaction of aircraft using each airport. Furthermore, aircraft operations at EYW are projected to grow by less than 20,000 operations over the next twenty years; an annual grow rate of one percent. Given this small amount of growth, existing airspace constraints are not projected to negatively affect the ability of EYW to accommodate these operations.

3.4 TERMINAL AREA

The capacity of terminal area facilities was calculated and compared to the forecasted levels of passenger demand. The primary areas analyzed in this section include the passenger terminal building and terminal apron area, while vehicle access and parking requirements are considered in Section 3.5. The capacities of these terminal components were evaluated in relation to forecasted demand to determine the overall adequacies of each component of the terminal area. Deficiencies in capacity of the terminal area were identified to determine future needs.

3.4.1 PASSENGER TERMINAL

3.4.1.1 Demand/Capacity Analysis

A summary of space in the existing terminal, by function, is provided in Table 3.6. As indicated, approximately 16,700 square feet of the existing passenger terminal is dedicated to passenger processing and operational purposes on the first floor. Space on the second floor is occupied by airline offices, FAA offices, restrooms and airport management and totals approximately 4,300 square feet. Total space on both floors equals slightly more than 21,000 square feet. An additional 1,000 square feet of space is available in the Cape Air annex building.

The future demand for space in the passenger terminal was calculated using a bottom-up methodology. This method consists of calculating the amount of space required for each terminal function such as airline space, public space, baggage claim, etc. The amount of space required for each of these functions is then added together to determine the total amount of terminal space required. This approach requires that planning factors or dimensions be specified for each terminal function.

TABLE 3.6
PASSENGER TERMINAL SPACE
Key West International Airport
Master Plan Update

Terminal Function	Length	Area	Space by Category	Percent of Space
Airline Space				
Ticket Counter Length	119			
Ticket Counter/ATO Space		4,466		
Baggage Claim Area		307		
Baggage Claim Carousel	61			
Departure Lounge		1,278		
Subtotal			6,051	29%
Public Space				
General Circulation		3,922		
Seating Areas		329		
Security Screening		374		
Restrooms		882		
Subtotal			5,507	26%
Concessions				
Ground Transportation		1,237		
Restaurant		3,004		
Gift Shop		345		
Subtotal			4,586	22%
Other				
Janitorial		23		
Mechanical/Electrical/Structural		563		
Subtotal			586	3%
Total First Floor			16,730	79%
Total Second Floor			4,336	21%
Grand Total			21,066	100%

Airline Ticket Counter and Offices

The existing ticket counter space is adequate in terms of counter length, but is woefully inadequate in terms of office space, passenger queuing area, and security screening area. With respect to ticket office, counter area and passenger queuing area, the existing terminal provides approximately 4,090 square feet of space. Demand projections indicate that approximately 8,625 square feet of space is required including space for passenger queuing.

Passenger Departure Lounge

The existing departure lounge contains 1,278 square feet of space excluding security screening, but including space consumed by airline podiums and access points to the aircraft ramp. Demand projections indicate that approximately 3,500 square feet is currently needed for a departure lounge and will increase to 5,700 square feet to accommodate passenger demand in the year 2021. The current deficiency of space in the departure lounge as well as the lack of access to restroom facilities results in passengers being held on the unsecure side of the security screening station until a flight is announced as being ready for boarding. Once a boarding announcement is made, all of the passengers for the flight are processed through security screening. While this method of processing passengers limits the extent of crowding in the departure lounge, it creates extreme passenger queues at the security station that block passenger circulation in the terminal and force passengers outside of the terminal (see description under the Security Screening heading).

An additional problem is lack of space for secondary screening. As a result of increased security mandated following the events of September 11, 2001, passengers are selected on a random basis for secondary screening. This screening presently occurs just outside of the passenger terminal in an area that has been fenced to control passenger movement to the aircraft. Adequate space for secondary screening should be provided inside the departure lounge so passengers can be protected from the weather while being contained in a secure area.

Security Screening

The amount of space for security screening is slightly more than 300 square feet. This includes the area occupied by the x-ray machine and the walk-through magnetometer as well as a 10-foot queuing area in front of the screening station. Visual observations of demand at the screening station reveal that the amount of space is severely undersized to accommodate existing passenger loads and will become even more problematic as passenger volumes increase in the future.

Queues for security screening often extend out the terminal entrance and down along the terminal curbfront area as shown in Figure 3.3. As noted above, this blocks passenger circulation inside the terminal and inconveniences passengers as they are forced into waiting in extended queues. Although there is a canopy over the curbside area, passengers are still exposed to the heat and during thunderstorms can be subject to wind-driven rain. Consultation with terminal tenants revealed that attempts to maintain these queues inside the terminal have led to severe conflicts with passenger queues for ticket counters or passenger queues for rental cars and baggage claim.

Demand projections indicate that over 900 square feet of space is currently needed for primary security screening. This requirement will increase to over 1,300 square feet in the year 2021, depending on the number of security screening stations used.

Restrooms

In addition to being undersized to meet passenger demand, existing restroom facilities in the passenger terminal are not optimally situated. The existing restroom facilities are located in two places. The first location is near baggage claim, while the second location is near the restaurant. The restrooms near baggage claim are the smaller of the two, are seriously undersized, and often have queues extending out of them. The restrooms near the restaurant are bigger and better able to accommodate demand, but are remote from the majority of passengers and not easily visible.

These two sets of existing restrooms occupy approximately 800 square feet of space. The space program indicates that just under 2,000 square feet of restroom space is needed. This space requirement includes an allocation for restrooms accessible from the departure lounge.

Baggage Claim

The existing baggage claim area is undersized both in terms of baggage claim carousel as well as baggage claim lobby area. The existing baggage claim carousel is situated in the middle of an area that accommodates rental car counters as well as the entrance from the aircraft ramp and a primary exit to the terminal curb. Passenger flow in this area becomes congested as a result of numerous crossing passenger flows as well as passengers waiting for baggage to arrive on the carousel.

The existing baggage carousel provides 61 linear feet of claim device. The space program indicates that approximately 100 feet is currently needed and will increase to 170 feet in the year 2021.

Other Terminal Functions

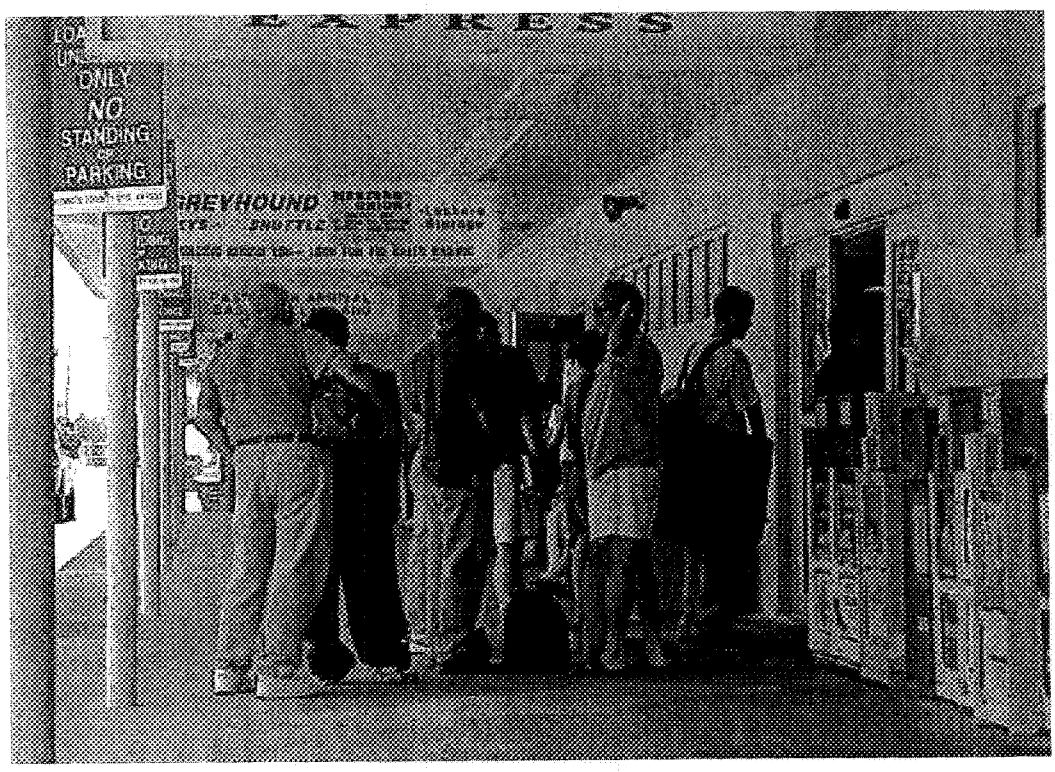
In addition to the major terminal functions listed in the preceding paragraphs, the space allocation program also determined area requirements for functions such as public seating areas, meeter/greeter areas, concessions, mechanical/electrical, general circulation, airport management and janitorial needs. The methodology used to calculate the required areas for each of these functions is provided in the spreadsheet shown in Appendix C – Passenger Terminal Space Program.

3.4.1.2 Facility Requirements

The requirements for additional terminal space were calculated by subtracting the existing amount of terminal space from the estimated demand for each of the growth scenarios. Table 3.7 presents a summary of the additional terminal space required during the study period. As the table indicates, the amount of additional space required ranges from 16,500 to 27,5000 square feet during the study period. It should be noted that the deficiencies in some functions are more severe than others as can be seen in the spreadsheet contained in Appendix D - Passenger Terminal Space Program.

SECURITY QUEUE

SECURITY QUEUE EXTENDING OUT OF TERMINAL



GRAPHICS\KEYWEST\MPUPDATE2001_FIG-3-3.AI

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SECURITY QUEUES

FIGURE: 3.3

TABLE 3.7
TERMINAL SPACE REQUIREMENTS
Key West International Airport
Master Plan Update

Year	Terminal Space Demand (S.F.)	Existing Terminal Space (S.F.)	Terminal Space Requirements (S.F.)
2001	38,500	22,000	16,500
2006	41,000	22,000	19,000
2011	43,000	22,000	21,000
2016	44,000	22,000	22,000
2021	49,500	22,000	27,500

Note: The quantity for existing terminal space includes both floors of the existing terminal as well as the Cape Air Annex.
Source: URS, 2002.

3.4.2 TERMINAL APRON

The aircraft parking apron for commercial passenger flights adjoining the passenger terminal has 700 linear feet of frontage and a depth of approximately 420 feet. It encompasses an area of approximately 32,600 square yards. Within this area is space for 12 aircraft parking positions including one space for U.S. Customs inspections. This leaves 11 aircraft parking positions for commercial aircraft flights. If a maximum of five air carriers provide service at the airport, these parking positions provide sufficient space for two aircraft to be parked at any one time with one extra. While this amount of space is sufficient during hours of operations, airlines often need to park additional aircraft overnight to operate early morning departures.

The demand for overnight spaces can be controlled through use of rates and charges. Given the extremely limited space at EYW and the high cost of attempting to provide facilities for limited use, such as overnight parking, the construction of additional ramp for this purpose is not recommended at this time.

3.5 SURFACE TRANSPORTATION

3.5.1 INTRODUCTION

The purpose of this section is to evaluate existing and future vehicle traffic operations and identify any improvement needs for the surface transportation system supporting EYW. This analysis includes the airport circulation roadway, the terminal curb frontage, and the parking facilities.

3.5.2 AIRPORT ROADWAYS

EYW is served by Faraldo Circle, a two-lane, one-way facility that connects the airport to South Roosevelt Boulevard and provides access to the public parking, the passenger terminal, rental car lots and general aviation facilities. In addition to Faraldo Circle, access to the rental car ready lots, the

department of public works and air cargo is provided via Stickney Road which also connects to South Roosevelt Boulevard.

The performance of roads is qualified based on levels of service (LOS), which are given letter designations from "A" to "F." LOS "A" represents the best operating conditions and LOS "F" the worst.

The capacity of Faraldo Circle is approximately 2,000 vehicles per hour. Visual observations indicate that the road operates and Level of Service A and will continue to operate at Level of Service A throughout the study period. No capacity improvements to Faraldo Circle or Stickney Road are required.

3.5.3 AIRPORT PARKING

An inventory of parking facilities was conducted. This inventory recorded the number of parking spaces available for all public and employee parking facilities and also for the rental car lot. The following summarizes the existing parking facilities:

Type of Parking	Number of Parking Spaces
Short-Term Public	31
Long-Term Public	280
Rental Car	128
Employee	92

The existing short-term parking facility already operates at or near capacity during the peak periods. The inventory and consultation with airport management indicated that overall 70 percent of the long-term parking spaces were occupied. However, this percentage is highly seasonal. During the peak season months of December through March this percentage can be close to 100 percent, while it can be as low as 50 percent during off peak months. Typically, the peak parking occupancy rate should not exceed 85 to 90 percent in order to avoid excessive vehicular circulation by motorists searching for an empty space.

Consultation with rental car operators revealed that the ready and return lots operate at 100 percent of capacity. Consultation with rental car operators reveals that additional ready/return spaces will be needed to meet future levels of demand.

Based on the existing demand, it is evident that the existing parking facilities are already operating near capacity during peak travel periods, but have significant excess capacity during other periods. Table 3.8 lists the estimated parking needs for future years for short-term and long-term public parking, as well as parking for rental cars and employees. For design purposes, future parking requirements for public and rental car parking were calculated by applying the projected growth rate of passenger enplanements to current level of peak period occupancy. As shown in this table, approximately 22 additional spaces will be needed for short-term parking and 46 additional spaces for long-term parking by the year 2021. The greatest need is projected for rental car parking, which

will need 93 additional spaces by 2021. This demand could potentially be mitigated through operational efficiencies by the rental car companies. Therefore, this demand should be reexamined prior to the construction of any additional parking facilities for rental car purposes.

TABLE 3.8
PARKING REQUIREMENTS
Key West International Airport
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Category	Parking Projections				
	2001	2006	2011	2016	2021
Short-Term Public					
Demand	31	36	42	47	53
Capacity	31	31	31	31	31
Add Spaces Required	0	5	11	16	22
Long-Term Public					
Demand	192	226	259	293	326
Capacity	280	280	280	280	280
Add. Spaces Required	-88	-54	-21	13	46
Rental Car					
Demand	130	153	176	198	221
Capacity	128	128	128	128	128
Add. Spaces Required	2	25	48	70	93
Employee					
Demand	80	85	90	95	100
Capacity	92	92	92	92	92
Add. Spaces Required	-12	-7	-2	3	8
Total Demand	433	500	567	633	700
Existing Spaces	531	531	531	531	531
Total Additional Spaces	-98	-31	36	102	169

Note: Negative value indicates demand is less than capacity.

The growth rate of passenger enplanements is not an appropriate methodology for estimating employee parking requirements. Therefore, a somewhat arbitrary factor of 1 parking space per year was applied to employee parking requirements. This rate of growth results in a demand for 8 additional parking spaces in the year 2021.

As shown in Figure 3.4 the total demand for parking spaces in the year 2021 is estimated to equal 700 spaces, which is 169 more parking spaces than the 531 spaces that are provided by existing parking facilities. Options for increasing automobile parking capacity at the airport will be examined in Section 4 – Alternatives.

3.5.4 TERMINAL CURBSIDE

The curb in front of the passenger terminal provides approximately 300 linear feet for passenger loading and unloading. An additional 50 feet of curb is provided in front of the terminal annex where Cape Air operates. Consultation with airport management, and visual observations, indicate that the terminal curb is rarely full, even during peak hours. This is due to a combination of factors

including the fact that majority of passengers using the airport are visitors that typically go straight to taxis, rental cars or hotel courtesy vehicles rather than private vehicles. Furthermore, low-cost short-term parking is available directly across from the terminal curb for residents picking up arriving passengers. This further reduces demand for terminal curb. On the basis of current use patterns the existing amount of terminal curb will be sufficient to meet projected levels of demand.

3.6 AIRCRAFT RESCUE AND FIREFIGHTING (ARFF)

The FAA has established specific requirements for aircraft rescue and firefighting (ARFF) equipment. These requirements shown in Table 3.9, vary depending upon new frequently aircraft of various sizes serve the airport. As the table indicates, the requirements are stated in terms of "Indexes" that begin with the letter "A" for airports serving small aircraft and extend to Index "E" for airports serving large aircraft. Each Index letter defines a range for aircraft length. Index A is defined as aircraft that have a length of less than 90 feet. The longest index group with an average of 5 or more daily departures by air carrier aircraft is the Index required for the airport.

TABLE 3.9
ARFF EQUIPMENT REQUIREMENTS
Key West International Airport
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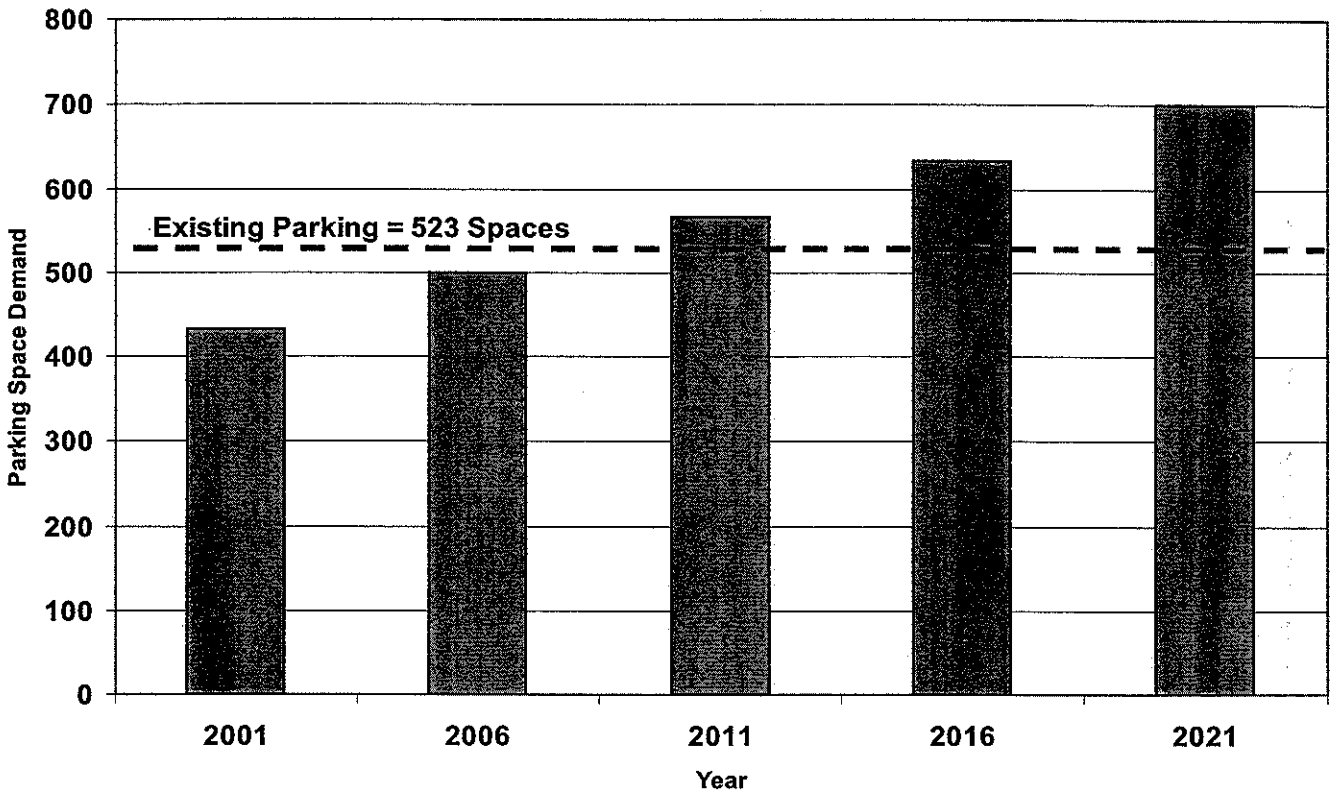
Airport Index	Length of Aircraft (Representative Aircraft)	Vehicles		Extinguishing Agents	
		Light-Weight	Self-Propelled	Dry Chemicals (Pounds)	Water (Gallon)
A	Under 90 (Dash-8)	1	0	500 Sodium or 450 Potassium	0 100
B	90-125 (CRJ-700)	1	1	500 Sodium or Halon	1,500
C	126 to 158 (MD-80)	1	2	500	3,000
D	159 to 199 (767)	1	2	500	4,000
E	Over 200 (747)	1	2	500	6,000

[1] Length of largest aircraft providing an average of five scheduled departures per day. If there are less than an average of five daily departures by aircraft in a particular index, then the next lower index applies.

Through the first half of 2002 there were no commercial service aircraft having a length greater than 90 feet that averaged 5 or more daily departures at EYW. Thus, the airport was classified as Index A. However, it is likely that EYW will need to meet the requirements for Index B in the near future due to the introduction of CRJ-700 regional jet service at the airport. The CRJ-700 has a fuselage length of 106'8" feet which places it in Index B. As a result of these regional jet operations, airport management requested that the ARFF services at EYW be certified by the FAA as meeting the requirements of Index B. This was accomplished in September 2002. Regular operations by aircraft in Index C are not projected to occur during the 20-year study period.



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PROJECTED PARKING DEMAND

FIGURE: 3.4

GRAPHICS\KEYWEST\MPUPDATE2001_FIG-3-4.AI

As described in Section 1 - Inventory, ARFF services at EYW are currently provided from a modern ARFF station located between the passenger terminal and the air traffic control tower. Services provided from this facility meet the vehicle, equipment and personnel requirements of Index B as specified by Federal Aviation Regulation Part 139.315. Therefore, the existing ARFF facilities are sufficient to meet existing and future demands.

3.7 SUPPORT FACILITIES

3.7.1 AIRPORT MAINTENANCE

The maintenance function at an airport is responsible for a wide range of facilities including buildings, pavements, utility systems (lighting, drainage, fueling) and open land. In conjunction, the supplies and equipment required to maintain each of these facilities/systems are numerous and varied. As described in Section 1 – Inventory, the airport maintenance building is the former ARFF station. It is located adjacent to the west-end of the passenger terminal.

The building has one bay for vehicle storage as well as storage of equipment and supplies. Consultation with airport management reveals that this building is sufficient to meet the maintenance and storage requirements of the airport through the duration of the study period.

3.8 GENERAL AVIATION AREA

The purpose of this evaluation is to determine the capacity of existing general aviation facilities and their ability to meet forecasted levels of demand during the planning period.

In this analysis, the following types of facilities were evaluated:

- Storage hangars
- Based aircraft apron
- Transient aircraft apron

Details of the analysis for each type of facility is provided in the following paragraphs.

3.8.1 STORAGE HANGARS

3.8.1.1 Demand/Capacity Analysis

The demand for storage hangars is dependent upon the number, and types, of aircraft expected to be based at the airport, as well as local climatic conditions, airport security, and owner preferences. The percentage of based aircraft that are stored in hangars varies from state to state, but is usually greatest in regions that are subject to extreme weather conditions.

Demand for storage hangars is usually estimated by assuming that a certain percentage of aircraft owners will desire hangars for their aircraft. The percentage of owners desiring hangar space usually varies by type of aircraft. It is assumed that a greater percentage of owners of high-performance aircraft will desire hangar space as compared to owners of low performance aircraft. Because the estimates are based upon assumptions of demand, the actual demand for hangar space can vary significantly from the estimate.

The actual demand for hangar space at EYW was recently assessed as a result on an ongoing project for the construction of additional open-bay hangars and T-hangars by Island City Flying Service and a group of based aircraft owners. The project has planned the demolition of 11 existing hangars that are in extremely poor condition and the construction of 10 new open-bay hangars and 10 T-hangars to replace these facilities and meet current demand. Consultation with Island City Flying Service revealed that all of the open-bay hangars are committed for occupancy; however, 4 T-hangars are still available for rent. Representatives of Island City Flying Service revealed that the demand for hangar space is highly sensitive to price.

On the basis of the actual demand assessed through this project, it is estimated that the demand for hangar space is approximately one-third of the aircraft based at the airport. Assuming this relationship remains constant in the future, it is estimated that demand will exist for approximately 22 hangars by 2017. This represents two more hangars than are planned for in the current project.

Since the demand for hangar space is largely a personal preference of the aircraft owner. The demand is highly variable and subject to change. This issue will require re-evaluation throughout the course of the study period.

3.8.1.2 Facility Requirements

On the basis of the hangar demand relationship discussed in the preceding paragraph, it is estimated that there will be a demand for two additional hangars through the study period. As noted, this issue will require evaluation over time.

3.8.2 BASED AIRCRAFT APRON

Apron areas should be provided for based aircraft that are not stored in hangars. Parking for based aircraft is provided north and west of the FBO. These areas provide approximately 33,000 square yards of paved apron for aircraft tie-downs. The capacity of apron for based aircraft at EYW is somewhat difficult to determine because both based aircraft and itinerant aircraft are parked on the ramp in front of the FBO. The original design of the ramp areas provided parking for approximately 60 aircraft. However, due to variations in aircraft size and where the aircraft are actually parked on the apron, it appears that approximately 70 spaces are actually available.

Consultation with Island City Flying Service revealed that the existing ramp along with the planned hangars project, which includes space for ten additional tie-downs, will be adequate to meet existing

and future demands for parking of based aircraft. Therefore, no additional apron for based aircraft is required at this time.

3.8.3 TRANSIENT AIRCRAFT APRON

Transient aircraft visiting EYW typically park at the apron in front of the FBO as well as overflow parking to the west. The demand for transient ramp is usually estimated by applying a factor to design day aircraft landings. The accuracy of these estimates varies from one airport to another. Therefore, Island City Flying Service was consulted regarding the demand for transient ramp at EYW. This consultation revealed that although the number of aircraft varies from day to day, a typical demand is for 5 to 10 aircraft on a slow weekday. Island City Flying Service indicated that the existing ramp area is sufficient to serve existing levels of itinerant demand except during major events. These events include Fantasy Fest at Halloween, which attracts as many as 200 aircraft over a period of 2 to 3 days, New Year's Eve which attracts as many as 150 aircraft over 2 to 3 days, and Cayman Caravan which attracts up to 100 aircraft. During these events, aircraft fill the existing aprons and are parked on unpaved areas of the airport. Because the peaks of aircraft associated with these events are so extreme and occur on an infrequent basis, it does not appear to be cost effective at this time to provide additional paved ramp to accommodate these operations. Therefore, no additional itinerant ramp is proposed at this time.

3.9 AVIATION FUEL STORAGE FACILITIES

Table 3.10 and Figures 3.5 and 3.6 present historical fuel sales at EYW from 1993 through 2001. As noted in Section 1 - Inventory, the airport has three 12,000-gallon fuel tanks in the fuel farm. Two tanks contain Jet-A, while the other tank contains avgas.

TABLE 3.10
HISTORICAL FUEL SALES (GALLONS)
Key West International Airport
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Year	Jet A			AVGAS			Total Fuel
	Airline	GA	Total	Airline	GA	Total	
1993			643,186			392,994	1,036,180
1994			879,377			419,663	1,229,040
1995	510,947	516,429	1,027,376	8,000	476,798	484,798	1,512,174
1996	581,798	496,141	1,077,939	40,000	442,072	482,072	1,560,011
1997	717,743	631,931	1,349,674	80,000	480,680	560,680	1,910,354
1998	763,190	534,665	1,297,855	32,000	499,869	531,869	1,829,724
1999	858,570	622,441	1,481,011	40,000	461,073	501,073	1,982,084
2000	831,253	682,109	1,513,362	24,000	432,461	456,461	4,969,823
2001	732,735	780,390	1,513,125	48,000	406,877	454,877	1,968,002

A figure of 10 percent of annual fuel sales was used to estimate peak month sales. This equates to 45,500 gallons for avgas and 151,000 gallons for Jet-A. On the basis of a 12,000-gallon capacity for avgas, a fifteen-day fuel supply is currently provided. With respect to Jet-A, a four-day to five-day

supply exists on the basis of the existing 24,000-gallon capacity. These capacities are adequate for existing levels of demand, but may not be sufficient to accommodate projected demand. The following paragraphs examine future fuel storage requirements.

Projections of future fuel flow were made using a series of assumptions and calculations. For fuel use by general aviation, the same percentage of growth forecasted for operations (48 percent) was applied to fuel flow. For fuel use by airlines, a gallons per departure factor was determined for existing operations and then was applied to the future number of departures.

Applying these factors led to an estimated of peak month fuel flow of 65,000 gallons for avgas and 219,00 gallons for Jet-A in 2017. These volumes equate to an eleven-day supply for avgas and a three-day supply for Jet-A.

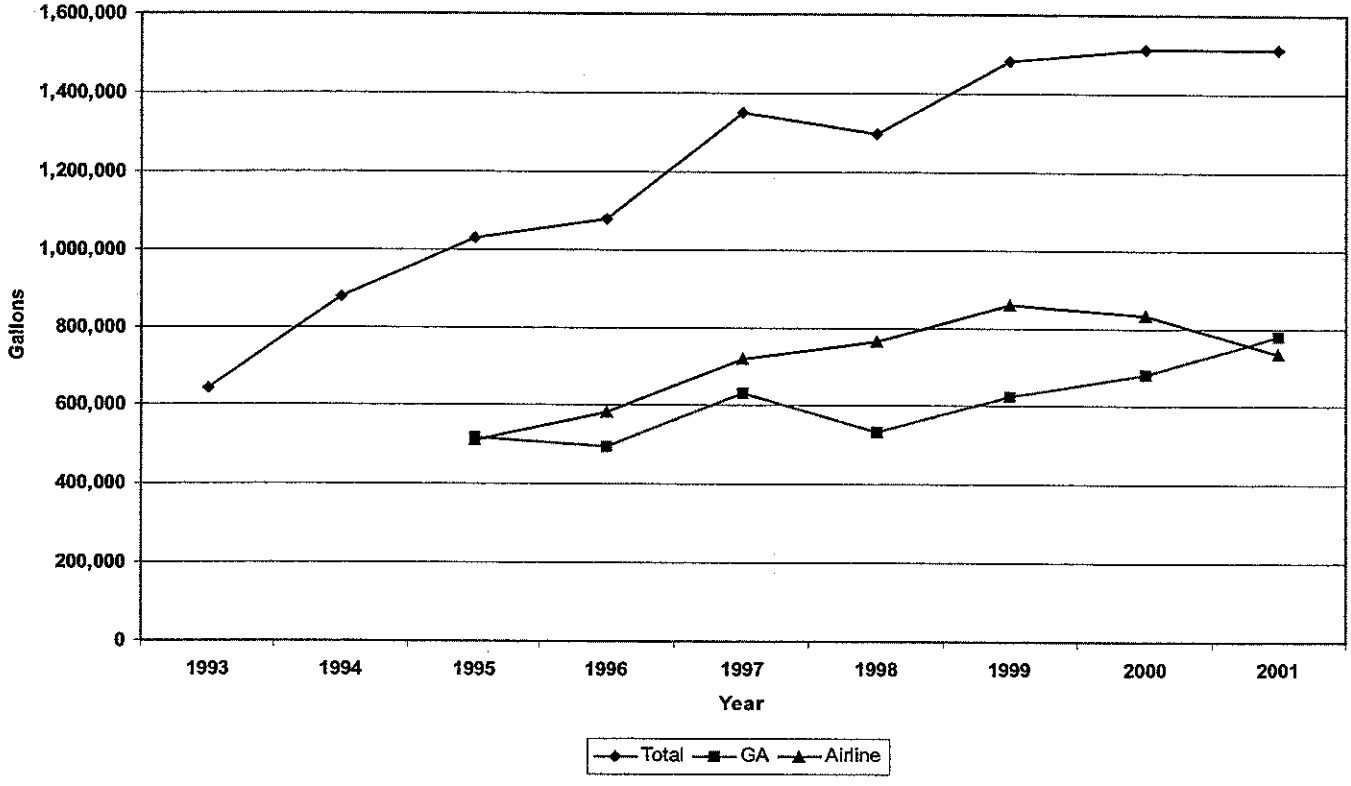
According to Island City Flying Service personnel, approximately 7,500 gallons of fuel are delivered daily to the fuel farm. This volume could be increased in the future to meet increased level of future demand. Therefore, an expansion of fuel farm facilities to accommodate future levels of demand is not anticipated at this time. However, sufficient space is available at the existing fuel farm location to accommodate additional storage tanks for AVGAS or Jet-A should it be required.

3.10 SUMMARY OF FACILITY REQUIREMENTS

The results of the demand/capacity analysis and an examination of facility requirements revealed the following:

Airfield

- The existing airfield is adequate to meet projected demand of aircraft operations on an hourly and annual basis throughout the twenty-year duration of the study period.
- The airfield's safety areas do not meet FAA criteria and need to be improved.
- The existing runway should be extended from its existing length of 4,801 to a length of 5,800 feet to enable unrestricted operation of regional jets to existing destinations. This conclusion is subject to further environmental investigation concerning feasibility and cost.
- The possibility of providing precision instrument approach capability should be explored through the use of a transponder landing system or GPS with LAAS.
- The existing airspace structure is constrained by the proximity of NAF Key West, but should not present a problem in terms of the ability of EYW to accommodate the projected number of aircraft operations throughout the study period.



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HISTORICAL JET-A FUEL SALES

FIGURE: 3.5

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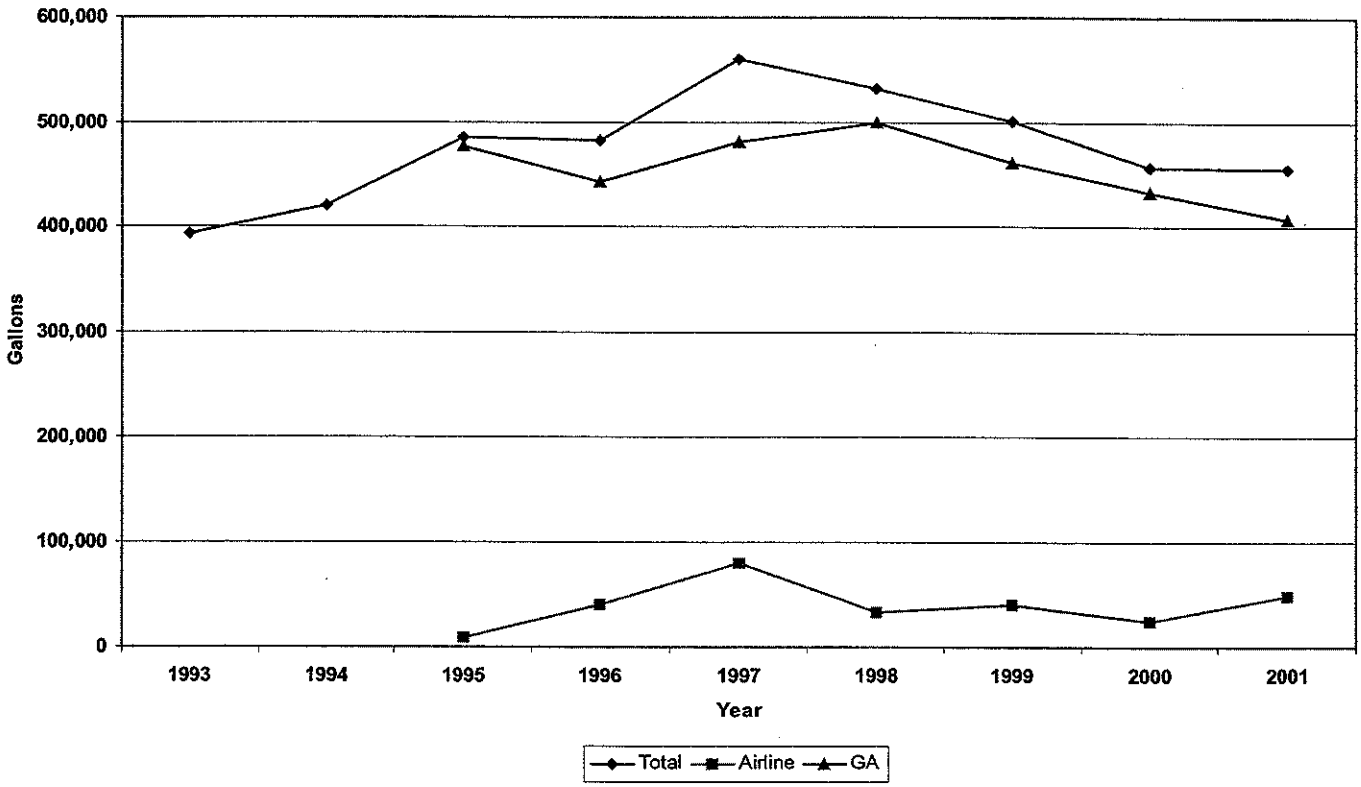

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HISTORICAL AVGAS SALES

FIGURE: 3.6

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